

REMARKS

This is in response to the Office Action dated December 29, 2006. Applicant has amended the application as set forth above. In more specific, Claims 1-4 have been canceled, and Claims 5-9 have been added. All the features of the added claims are fully supported by the originally filed application and the original claims. Thus, the amendments do not add new matter to the application. Upon the entry of the amendments, Claims 5-9 are pending in this application. Applicant respectfully requests the entry of the amendments and reconsideration of the application.

OBJECTION TO SPECIFICATION

The Examiner objected the specification because of informalities. Applicant has amended the specification to meet formality requirements. Amended Specification is attached in a separate sheet. Withdrawal of the objection is respectfully requested.

OBJECTION TO THE DRAWINGS

The Examiner pointed out that “aut shaft” in Figures 5 and 6 should be changed to “out shaft” and that the “shaft grooves”, “hollow parts”, “transmission varying elements”, and “unidirectional clutches” must be shown or the feature(s) canceled from the claim(s). In response, Applicant has canceled “transmission varying elements”, and “unidirectional clutches” from claim language, and amended the drawings to show numbers denoting “shaft grooves” and “hollow parts”. No new matters are added in the drawing amendment, and all the original drawings are replaced with Replacement Drawing Sheets as follows:

FIGS. 5 and 6 are replaced with new sheets corrected to carry “out shaft”;

FIG. 3 is replaced with new sheet to include “25” denoting “shaft grooves” and “26” denoting “hollow parts”; and

FIGS. 1-2 and 4 are replaced with new sheets to carry better prints.

DISCUSSION OF CLAIM OBJECTIONS

The Examiner objected Claims 1-4 because of informalities. In response, Applicant has canceled Claims 1-4 to avoid informalities, and added Claims 5-9 with Examiner's suggestion incorporated. Therefore, this objection is moot. Applicant respectfully requests withdrawal of the claim objections.

DISCUSSION OF REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

The Examiner rejected Claims 1-3 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. In response, Applicant respectfully submits that the definitions and structures of "shaft grooves" and "hollow parts" are described in the original specification including lines 11-19, page 2, line 12, page 3 to line 1, page 4, and Fig. 3. Also, Applicant respectfully submits that the specification amendment, the claim amendment, and the drawings amendment overcome the Examiner's rejection. Applicant respectfully requests withdrawal of this rejection under 35 U.S.C. §112, first paragraph.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

The Examiner rejected Claims 1, 2, and 4 under 35 U.S.C. §103(a) as being unpatentable over Johnson (US 3,242,769) in view of Palmer (US 5,662,009). Applicant respectfully disagrees with the Examiner. However, Applicant has canceled Claims 1-4 solely to expedite the prosecution of the application. Therefore, this rejection is moot. Withdrawal of the rejection is respectfully requested.

PATENTABILITY OF PENDING CLAIMS OVER CITED REFERENCES

Regardless of the moot status of the rejections under sections 103, Applicant discusses the patentability of Claims 5-9 over the cited references.

Prima Facie Case of Obviousness

The Patent and Trademark Office has the burden under section 103 to establish a *prima facie case* of obviousness. In re *Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-87 (Fed. Cir. 1984). To establish a *prima facie case* of obviousness, three basic criteria must be met: first, the prior art reference (or references when combined) must teach or suggest all the claim limitations; second, there must be some suggestion or motivation, either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; finally, there must be a reasonable expectation of success. M.P.E.P. §2143.

Disclosure of Johnson

Johnson teaches a power transmission device using a differential gear device in which a power take-off shaft can be rotated at various speed in either same direction of rotation as that of the driven power input shaft or oppositely. The device comprises a power input shaft (2), a power take-off shaft (12), bevel pinions (6, 7, 16, 17), bevel gears (8, 9, 18, 19), spur gears (10, 11, 20, 21), an idler pinion (23), friction disks (27, 30), a friction block (32), and manipulating shaft (31) (See, e.g., column 2, lines 20-72, and Figs. 1 and 2).

Disclosure of Palmer

Palmer teaches a drive mechanism providing an oscillatory-rotational-drive input and a reversible rotational-driven output using one-way clutches and spring-loaded pivotable selector mechanisms. The drive mechanism comprises an input-member (1), an output-member (9), bevel-gears (5, 13), an input-selector (2), an output-selector (8), retaining rings (4C, 14C), gears (7, 11), roller-clutches (4B, 14B), and roller-clutches (6B, 12B) (See, e.g., columns 4-6, and Figs. 1, 9-11, 15A, 15B).

No Prima Facie Case of Obviousness Has Been Established

The Examiner mentioned that Johnson disclosed every element except for unidirectional clutches being provided on both sides of the main shaft and the auxiliary shaft.

Applicant respectfully submits that Johnson does not disclose or suggest every element of the added Claim 5 of the invention. First of all, Johnson's bevel pinions (6, 7, 16, 17) is not control gears in the invention. The bevel pinions (6, 7, 16, 17) work as a planet gear in a differential gear system, which conveys extra rotation between the bevel gears (8, 9) passively but does not have any connections to the control mechanism of the distribution of the torque. Johnson's control mechanism using the friction block (32) and friction disks (27, 30) controls the speed of only one gear line (gear line with 10, 20, and 26 or gear line with 11, 21, 29, and 23). Furthermore, Johnson's gear lines does not provides a high speed gear line and a low

speed gear line, but a same direction gear line (10, 20, 26) and a opposite direction gear line (11, 21, 29, 23).

In contrast, the control gears of the invention comprises a planetary gear carrier, four planetary gears, linear gear, and control ring gears, and controls the position of the control lever through the planetary gear carrier to which the control lever is connected. The position of the control lever determines the distribution of input torque between the high speed gear line and the low speed gear line.

As discussed in the above, Johnson does not disclose: rack and pinion gears for inputting torque from the main shaft; a control lever for controlling the distribution of torque between the high and low speed gear lines; an idle gear between the spur gears (10, 20) for the same direction gear line; and a control gear comprising a planetary gear carrier, four planetary gears, linear gear, and control ring gears.

The Examiner also mentioned that “It would have then been obvious to one of ordinary skill in the art at time of invention was made to modify Johnson to have one-way clutches in view of Palmer so that both forward and reverse rotational input can be used to produce forward and reverse rotational drive (Palmer, col. 1, lines 25-27).”

Applicant respectfully disagrees with the Examiner and submits that Palmer’s mechanism for rectifying of oscillatory rotation into unidirectional rotation does not remedy the deficiencies of Johnson regarding the control lever, the control gear, and a torque distribution between the high and low speed gear lines as well as the “unidirectional clutches”.

Palmer’s oscillatory rotation rectifying mechanism is different from the invention claimed in Claim 5. The Examiner mentioned that Palmer’s input-selector (2) and output-selector (8) discloses the control lever in the invention. As shown clearly in Figs. 9-11 of the cited reference, however, the selectors select only one side out of the shafts 3 and 15 and such a discrete selection cannot provide a continuous variable transmission of torque between the two shafts or between the input-member (1) and the output-member (9). Therefore, the structure of Palmer’s mechanism does not disclose or suggest the gear-type continuously variable transmission of the invention.

As such, the combination of Johnson and Palmer does not provide every element of the added Claim 5 and its added dependent Claims 6-9. Therefore, the combination does not

establish a *prima facie* case of obviousness. Applicant respectfully requests allowance of Claims 5-9.

DEPENDENT CLAIMS


Although applicant has not addressed all the issues of the dependent claims, applicant respectfully submits that applicant does not necessarily agree with the characterization and assessments of the dependent claims made by the examiner, and applicant submits that each claim is patentable on its own merits. Claims 6-9 are dependent directly on Claim 5. Therefore, Applicant respectfully requests prompt allowance of the claims.

CONCLUSION

In view of the amendments and remarks made above, it is respectfully submitted that Claims 5-9 are in condition for allowance, and such action is respectfully solicited. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to contact the undersigned attorney at the number listed below.

Respectively submitted,

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